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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,185	02/14/2001	Arlie R. Conner	1266-033	7802

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EXAMINER

CURTIS, CRAIG

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/681,185

Applicant(s)
CONNER

Examiner
Craig Curtis

Art Unit
2872



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jul 31, 2002
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-20, and 22-24 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-20, and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Disposition of the Instant Application

- This Office action is responsive to Applicant's Amendment A filed on 31 July 2002, which has been made of record in the file as paper no. 7. By this amendment, Applicant has canceled claims 3 and 21 and amended claims 1, 2, 4-12, 20, and 22.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 4-20, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. (5,760,850).

With regard to claim 1, Nakanishi et al. disclose the invention as claimed--A color display system, comprising: a refractive lens array (Fig. 6, lens array 5) for receiving and focusing diverging color components of light; a holographic grating (Fig. 6, holographic elements 7, 8; Fig. 7, holographic element 12) receiving the color components of light from the refractive lens array for aligning the color

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components of light along distinct, non-diverging paths (See col. 11, ll. 56-61; also see principal rays: col. 12, lns. 53-59;)--EXCEPT FOR an explicit teaching of the following: wherein said display optical system additionally comprises an imaging device having an array of pixels with pixel apertures with which the holographic grating aligns said color components of light along distinct, non-diverging paths.

It would however have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the display optical system of Nakanishi et al. with an imaging device (e.g., a CCD detector/imager) having an array of pixels with pixel apertures with which said holographic grating aligns said color components of light along distinct, non-diverging paths, such imaging devices being notoriously old and well-known in the imaging art, for at least the purpose of allowing one to, for the sake of example, determine the integrity of said display optical system prior to its being sold.

With regard to claim 2, said imaging device in the system of Nakanishi et al. described above with regard to amended claim 1 would inevitably be oriented such that it define a plane normal to which the holographic grating aligns distinct color components of light (See principal rays depicted in Figs. 6 & 7).

With regard to claims 4 and 14, Nakanishi et al. further teach wherein said lens array/focusing element includes an array of/plural cylindrical lenses (see Fig. 7, cylindrical in cross section into the page); and with regard to claim 13, Nakanishi et al. also teach wherein the focusing element includes a microlens array (element 5: see col. 10, ln. 5).

With regard to claims 5 and 17, noting that optical power refers exclusively to refractive, as opposed to diffractive, effects, said holographic grating is continuous and without optical power, and said diffractive color dispersing layer is isotropic and without optical power.

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With regard to claims 6 and 16, said holographic grating and said diffractive color dispersing layer each include a volumetric hologram (col. 10, Ins. 45-67--col. 11, Ins. 1-61).

With regard to claim 18, said imaging plane is a transmissive type electronic display panel with pixel apertures in a stripe formation (see Fig. 6, in which beams pass through pixels).

With regard to claims 7 and 19, said color divergence elements (the outermost portion of lens array 5 and hologram 7) provide, respectively, diverging color components of light to said refractive lens array and to said focusing element.

With regard to claim 8, the color divergence element includes plural angularly inclined dichroic mirrors (Fig. 1, dichroic mirrors 4R, 4G, 4B: col. 9, Ins. 36-4) for providing color separation of incident multi-color illumination light.

With regard to claims 9 and 10, the color divergence element includes a holographic grating (7) for providing color separation of incident multi-color illumination light and is substantially the same as the holographic grating for aligning the color components of light (7 is substantially the same as hologram 8).

With regard to claim 11, said holographic grating delivers the distinct color components of light to a selected plane and is positioned substantially midway between the selected plane and said lens array (See Figs. 6 & 7).

With regard to claims 12 and 15, Nakanishi et al. teach said focusing element (Fig. 7, focusing element 5), and said diffractive color dispersing layer (holographic optical element 7 in Fig. 7) positioned between the focusing element and the imaging plane for focusing separated color components to distinct regions of an imaging plane, the improvement comprising:

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a diffractive color dispersing layer positioned between the focusing element and the imaging plane for aligning the color components of light along distinct, non-diverging paths, the imaging plane including an array of pixel aperture of an electronic imaging device, said diffractive color dispersing layer aligning said color components of light to be normal to said imaging plane (as set forth previously hereinbefore with regard to like teachings).

With regard to claims 20 and 22-24, noting that the adjective telecentric refers to optical systems in which the entrance pupil and/or the exit pupil is located at infinity, and thus principal rays of the system are parallel to the optical axis of the system, Nakanishi et al. teach a telecentric color filtering method for providing telecentric color-filtered light to an imaging plane (the directing plural diverging color light components through the holographic grating to align the color light components along distinct, non-diverging paths that are telecentric with respect to the imaging plane being taught as set forth hereinbefore).

Response to Arguments

2. Applicant's arguments with respect to claim have been considered but are moot in view of the new ground(s) of rejection.

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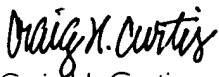
Contact Information

3. Any inquiry concerning this or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7721.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.



Audrey Chang
Primary Examiner
Technology Center 2800



Craig H. Curtis
Group Art Unit 2872
18 October 2002